

NATURAL GARDENS OF THE WASATCH—I

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Rock Gardens

The Wasatch range of mountains extends north and south almost the entire length of the state of Utah, and forms an important part of the Rocky Mountain system generally known as the intermountain country. The character of the vegetation in these mountains varies from that of a desert sagebrush slope at near 5000 feet to typical alpine meadow at above 10,000 feet elevation. Many parts of the range have not been thoroughly explored for plants and much work is yet to be done before an adequate knowledge of the species occurring here will be available.

Certain species play an important rôle in the vegetation of this mountain area and give to it a characteristic appearance. In this, as in many of our western areas, the increase in grazing operations is a factor in denuding much of the soil of its native vegetation. The botanist, agriculturist or layman interested in observing undisturbed areas of vegetation finds it increasingly difficult from year to year to do so. The following account will deal with a description of certain natural, undisturbed, rocky areas which the writer has visited and studied during the past season. It is impossible, of course, to mention all of the species occurring in these localities, and comment is restricted to those characteristic of the vegetation or to those of striking appearance.

In one particular area which was visited several times during the season a colorful effect was created about midsummer by the following species in bloom: *Castilleja linariaefolia* Benth., *Pentstemon humilis* Nutt., *Sedum stenopetalum* Pursh and *Allium acuminatum* Hook. The first-named species is a fine representative of the Indian paint-brush tribe, and it really paints the rocky terrain with its clumps of brilliant scarlet color. *Pentstemon humilis* is a dwarf, small-flowered member of this genus, but its habit of growing in dense clumps enables the plant to add its delicate shade of blue to our natural flower garden. *Allium acuminatum*, a lavender-flowered onion one foot high, and the bright yellow-flowered *Sedum* occupy a less conspicuous part in this picture, but upon closer inspection the crevices and pockets between the rocks are found to contain many individuals of these two species. Intermingling with the above but in smaller quantity are clumps and individual plants of *Pentstemon cyananthus* Hook., *Gilia aggregata* (Pursh) Spreng., *Linum lewisii* Pursh and the state flower of Utah, the sego lily, *Calochortus nuttallii* Torr. and Gray.

Another area showed earlier in the season great masses of *Phlox canescens* Torr. and Gray and *Phlox stansburyi* (Torr.) Heller.

Other species in flower at this time include the attractive little bulbous plants *Erythronium grandiflorum* Pursh, *Brodiaea douglasii* Wats., *Fritillaria pudica* (Pursh) Spreng., *Fritillaria atropurpurea* Nutt., and the bright blues and reds of *Delphinium menziesii* DC. and *Castilleja angustifolia* G. Don respectively. Many of these species deserve to be better known to the scientific and gardening public than they have been in the past. It may be said, in general, that areas of this type offer unusual opportunities to the scientist in his attempt to gain a better understanding of the vegetation, as well as to the rock garden fancier who desires hardy and attractive species which will add character and native charm to his garden.

Pentstemon cyananthus, mentioned above, is an example of a species that undoubtedly will enjoy wide popularity when its beauty and ease of culture become generally known. The writer has never seen a more beautiful spectacle than a rocky slope entirely covered with a mass of these plants, the tall two-foot spikes of clear sky-blue flowers painting the landscape with their color.

An account of the rock plants of this region would be incomplete without reference to what is perhaps the most characteristic species. Even the name of this plant, *Petrophytum caespitosum* (Nutt.) Rydb., a member of the rose family, suggests its preference for growing on rocks. The accompanying photograph gives an idea of the habit of growth of this plant. The prostrate branches are spread over perpendicular rock faces and the roots find footholds in crevices or depressions. By forming a dense mat of



FIG. 1. *Petrophytum caespitosum* on perpendicular cliff, two miles east of Logan, Utah. Approximately one-eighth natural size.

branches and leaves, an accumulation of rock particles and dead plant remains is soon gathered which in time provides a rich humus soil for the roots. A single plant may be from four to six

feet across, and the woody trunk at the base of the plant may measure three to four inches in diameter. The writer has tried to estimate the age of such an individual by counting the growth rings in the wood, but this is difficult since, as a consequence of very slow growth, little wood is laid down each year. The plant blossoms much after the fashion of *Acaena* or related genera, sending up, in late summer, small attractive spikes of rather inconspicuous white flowers.

It is hoped that a discussion of certain species characteristic of the vegetation of this area may be of value in calling attention to a few aspects of the flora that are perhaps not widely recognized. Many problems of a distributional nature are to be encountered in this region since it is a meeting place, so to speak, for floras of more or less distinctive adjacent areas. The intermountain region offers, therefore, a fine opportunity for a study of field botany from several points of view, particularly those dealing with origin, movement and distribution of native species.

Utah State Agricultural College,
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NOTES ON CALIFORNIA GRASSES

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During the spring and summer of 1935 collections were made by the writer in the San Joaquin Valley. Among these were many grasses found beyond their previously known range, and a few apparently distinct from anything yet described.

FESTUCA CONFUSA Piper. Vernalis, San Joaquin County, March 1, 1935, *Hoover 239*. This is to my knowledge the first record for the Great Valley although the species is frequent throughout central California, in both the Coast Ranges and the Sierra Nevada.

FESTUCA PACIFICA Piper, Contr. U. S. Nat. Herb. 10: 12. 1906. Rarely collected in the valley, but very common in many places, though never where the soil has been cultivated. The spikelets in most localities show all gradations from entirely glabrous or minutely scabrous to distinctly hairy.

FESTUCA PACIFICA Piper var. *ciliata* (Gray) Hoover comb. nov. *Festuca microstachys* Nutt. var. *ciliata* Gray; Beal, Grasses N. Amer. 2: 585. 1896. Quite common along the east side of the San Joaquin Valley, and on the west side at the north. Wherever I have found this variety, it intergrades completely with *Festuca pacifica* Piper: Madera (5 miles southeast), Madera County, March 30, 1935, *Hoover 475* and *476*. Collections from other regions including similar intergrading forms are the following: North Fork Eel River, Mendocino County, May 3, 1933, *Duran*